WHAT IS CLAIMED IS:

8

1	1.	A method of controlling an input voltage of a high frequency amplifier, the method
2		comprising:

- 3 measuring power supplied to a load;
- determining a first control variable for a series element disposed upstream from the
 high frequency amplifier based on the measured power and a given set point; and
 determining a second control variable for a switched DC supply unit from a voltage
 drop across the series element such that the voltage drop does not exceed a given
- The method of claim 1, wherein the power supplied to the load is determining by
 measuring a portion of the power supplied to the load.

maximum value and does not fall below a given minimum value.

- The method of claim 1, wherein the power supplied to the load is determining by
 measuring a portion of the power reflected from the load.
- The method of claim 1, wherein the control rate for controlling the series element is less
 than the control rate for controlling the DC supply unit.
- 5. The method of claim 4, wherein the control rate is less than 10 ms.
- 6. The method of claim 1, further comprising determining a third control variable for the series element from a voltage present at a switching element of the high frequency amplifier and a set point for the maximum allowable voltage that can be present at a switching element of the high frequency amplifier.
- 7. The method of claim 1, further comprising determining a fourth control variable for the series element from a power measured at an output of the high frequency amplifier and a given power set point.

- 1 8. The method of claim 1, further comprising determining a fifth control variable from a current measured at an output of the series element and a given internal set point for a maximum current.
- 1 9. The method of claim 6, further comprising:
- determining a fourth control variable for the series element from the power measured at an output of the high frequency amplifier and a given power set point; and
- determining a fifth control variable from a current measured at an output of the series element and a given internal set point for a maximum current.
- 1 10. The method of claim 9, wherein only the control variable causing a strongest control is transferred to the series element.
- 1 11. The method of claim 9, wherein the control rate for the first, third, fourth, and fifth control variables is faster than 10 ms.
- 1 12. The method of claim 9, wherein the control rate for the first, third, fourth, and fifth control variables is faster than 100 microseconds.
- 13. The method of claim 9, wherein the control rate for the first, third, fourth, and fifth control variables is between about 10 microseconds and 1 millisecond.
- 1 14. The method of claim 1, wherein the series element and an oscillator connected to the high 2 frequency amplifier are switched on and off synchronously.
- 1 15. The method of claim 14, wherein at least one control stage is switched on and off 2 synchronously with the series element.
- 1 16. A control arrangement for controlling an input voltage of a high frequency amplifier, 2 comprising:
- a series element disposed upstream from the high frequency amplifier;
- a first control stage for determining a first control variable from a power supplied to a

5	load and a set point; and
6	a switched DC current supply unit with an allocated second control stage, for
7	determining a second control variable from a voltage drop across the series element.
1	17. The control arrangement of claim 16, wherein the series element comprises at least one
2	semiconductor element.
1	18. The control arrangement of claim 17, wherein the semiconductor element is a transistor.
1	19. The control arrangement of claim 16, further comprising a third control stage connected
2	to the series element for determining a third control variable, wherein the third control
3	stage is supplied with voltage present at a switching element of the HF amplifier.
1	20. The control arrangement of claim 16, further comprising a fourth control stage connected
2	to the series element for determining a fourth control variable, wherein the fourth control
3	stage is supplied with a power measured at an output of the HF amplifier.
1	21. The control arrangement of claim 16, further comprising a fifth control stage connected
2	to the series element for determining a fifth control variable from the current measured at
3	an output of the series element and a given maximum set point for the current.
1	22. The control arrangement of claim 16, further comprising:
2	a third control stage connected to the series element for determining a third control
3	variable, wherein the third control stage is supplied with a voltage present at a switching
4	element of the HF amplifier;
5	a fourth control stage connected to the series element for determining a fourth control
6	variable, wherein the fourth control stage is supplied with a power measured at the output
7	of the HF amplifier; and
8	a fifth control stage connected to the series element for determining a fifth control
9	variable from a current measured at the output of the series element and a given
10	maximum set point for the current.

- 11 23. The control arrangement of claim 22, further comprising a switch for selecting the control variable to be transferred to the series element.
- 24. The control arrangement of claim 16, further comprising a command unit connected to an
 oscillator for driving the HF amplifier and to the series element or to a switching element
 connected to the series element.
- 1 25. The control arrangement of claim 24, wherein the command unit is a pulse generator.
- 26. The control arrangement of claim 24, wherein the command unit is connected to at least one control stage.